

## Product Overview

### PYTHON2000: CMOS Image Sensor, 2.3 MP, Global Shutter

For complete documentation, see the data sheet.

The PYTHON 2000 is a 2/3 inch 2.3 CMOS image sensor with a pixel array of 1920 by 1200 pixels.

The high sensitivity 4.8  $\mu\text{m}$  x 4.8  $\mu\text{m}$  pixels support low noise “pipelined” and “triggered” global shutter readout modes. Furthermore the correlated double sampling (CDS) support in global shutter mode results in reduced noise and increased dynamic range.

The sensor has on-chip programmable gain amplifiers and 10-bit A/D converters. The integration time and gain parameters can be reconfigured without any visible image artifact. Optionally the on-chip automatic exposure control loop (AEC) controls these parameters dynamically. The image's black level is either calibrated automatically or can be adjusted by adding a user programmable offset.

A high level of programmability using a four wire serial peripheral interface enables the user to read out specific regions of interest. Up to 8 regions can be programmed, achieving even higher frame rates. The sensor has 8 LVDS lanes, facilitating frame rates up to 225 frames per second in Zero ROT mode. Each channel runs at 720 Mbps. A separate synchronization channel containing payload information is provided to facilitate the image reconstruction at the receiving end.

The PYTHON 2000 is packaged in a 84-pin LCC package and is available in monochrome, color and extended Near Infrared (NIR) versions, both with and without protective tape.

#### Features

- IP-CDS global shutter technology
- True HW scalable family concept
- High configurability
- Fast adaptability
- Multiple windowing
- High Dynamic Range
- Higher frame rates

#### Applications

- Image Capture

#### Benefits

- Enables global shutter imaging with single digit noise performance
- Easily adopt multiple resolutions (5 resolutions with single PCB)
- High flexibility to optimize sensor for customer application
- Fast switching between operating modes
- Speed increase from windowing in x- and y- direction
- Retain image detail in high-contrast scenes
- Faster image capturing capabilities

#### End Products

- Machine Vision camera
- Industrial cameras and systems
- Intelligent Transportation Systems (ITS) camera
- Inspection systems (food, bottles, recycling labels)
- Medical Imaging Systems

## Part Electrical Specifications

Product	Pricing (\$/Unit)	Compliance	Status	Type	Megapixels	Frame Rate (fps)	Optical Format	Shutter Type	Pixel Size (µm)	Output Interface	Color	Package Type
NOIP1FN2000A-QTI		Pb-free	Active	CMOS	2.3	225	2/3 inch	Pipelined and Triggere d Global	4.8 x 4.8	LVDS	NIR	LCC-84
		Halide free										
		non AEC-Q and PPAP										
NOIP1SE2000A-LTI		Pb-free	Active	CMOS	2.3	225	2/3 inch	Pipelined and Triggere d Global	4.8 x 4.8	LVDS	Bayer Color	LBGA-128
		Halide free										
		non AEC-Q and PPAP										
NOIP1SE2000A-QTI		Pb-free	Active	CMOS	2.3	225	2/3 inch	Pipelined and Triggere d Global	4.8 x 4.8	LVDS	Bayer Color	LCC-84
		Halide free										
		non AEC-Q and PPAP										
NOIP1SN2000A-LTI		Pb-free	Active	CMOS	2.3	225	2/3 inch	Pipelined and Triggere d Global	4.8 x 4.8	LVDS	Mono	LBGA-128
		Halide free										
		non AEC-Q and PPAP										
NOIP1SN2000A-QTI		Pb-free	Active	CMOS	2.3	225	2/3 inch	Pipelined and Triggere d Global	4.8 x 4.8	LVDS	Mono	LCC-84
		Halide free										
		non AEC-Q and PPAP										

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